

Message Text

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ACTION OES-06

INFO OCT-01 EUR-12 EA-09 IO-11 ISO-00 ERDA-07 ERDE-00

ACDA-10 CIAE-00 INR-07 L-03 NSAE-00 NSC-05 EB-07

NRC-07 FEAE-00 DODE-00 PM-04 H-02 PA-02 PRS-01 SP-02

SS-15 USIA-15 CEQ-01 EPA-04 /131 W

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R 021814Z APR 76

FM AMEMBASSY PARIS

TO SECSTATE WASHDC 9503

INFO AMEMBASSY TOKYO

AMEMBASSY OTTAWA

AMEMBASSY LONDON

AMEMBASSY BONN

AMEMBASSY MADRID

USMISSION IAEA VIENNA

UNCLAS SECTION 01 OF 02 PARIS 09845

DEPT PASS ERDA, NRC

E.O. 11652: N/A

TAGS: TECH, TGEN, FR

SUBJECT: A C.N.R.S. REPORT ON NUCLEAR ENERGY RESEARCH
NEEDS

REF: A) STATE 077678, B) TOKYO 4468

1. SUMMARY. A REPORT ON NUCLEAR ENERGY PUBLISHED IN THE JANUARY 1976 ISSUE OF THE QUARTERLY "COURRIER DU C.N.R.S." (NATIONAL CENTER FOR SCIENTIFIC RESEARCH) WAS PICKED UP BY THE FRENCH PRESS AND HEADLINED AS AN ATTACK AGAINST THE GOVERNMENT'S NUCLEAR PROGRAM. THE REPORT RECOMMENDS THAT THE FRENCH NUCLEAR INDUSTRY BE DEVELOPED WITH GREATER CAUTION AND POINTS OUT SOME OF THE IMPORTANT PROBLEMS WHICH REMAIN TO BE SOLVED AT THE FUNDAMENTAL RESEARCH LEVEL. END SUMMARY

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2. C.N.R.S. CREATED IN THE WINTER OF 1974-75 SEVERAL WORKING GROUPS ON RESEARCH NEEDS IN THE VARIOUS SECTORS OF ENERGY. WITHIN THIS FRAMEWORK, A COMMISSION ON NUCLEAR PHYSICS WAS SET UP AND ITS SIX MEMBERS--MESSRS. ASTIER, FROISSART, JULLIAN, RIOU, SCHAPIRA, AND VENERONI--WERE INSTRUCTED TO STUDY PROBLEMS POSED BY BWR AND PWR REACTORS AND ADVISE ON RESEARCH NEEDED TO HELP SOLVE THE PROBLEMS. THE REPORT WAS PRESENTED TO AND DISCUSSED WITH MR. CHABBAL, ONE OF THE SCIENTIFIC DIRECTORS OF THE C.N.R.S. (AND, INCIDENTALLY, DIRECTOR OF THE NEW SOLAR ENERGY AGENCY). THE REPORT DEALS WITH SOME OF THE ASPECTS OF THE ELECTRO-NUCLEAR INDUSTRY WHICH CALL FOR FUNDAMENTAL RESEARCH AND ARE THEREFORE WITHIN C.N.R.S. COMPETENCY. IT DOES NOT PRETEND TO GIVE A FINAL ANSWER TO PROBLEMS WHICH ARE NOT RELATED TO BASIC RESEARCH IN NUCLEAR PHYSICS.

3. THE MAIN POINTS RAISED ARE: A) THERMAL POLLUTION, B) GASEOUS AND LIQUID EFFLUENTS, C) SAFETY OF REACTORS, AND D) REPROCESSING OF IRRADIATED FUELS.

A) THERMAL POLLUTION OF RIVERS WILL NOT BE EFFICIENTLY REDUCED BECAUSE THE UTILIZATION OF MASSIVE DISCHARGES OF HEAT WILL REMAIN LIMITED (2ND LAW OF THERMO). THE CONSTRUCTION OF COOLING TOWERS REQUIRES A MORE DETAILED STUDY ON THEIR IMPACT ON LOCAL METEOROLOGY.

B) GASEOUS AND LIQUID EFFLUENTS. THE MOST DISTURBING FACTOR IS THE DISCHARGE OF TRITIUM WHICH MUST BE CAREFULLY MONITORED. RIGOROUS CONTROL MEASURES SHOULD BE TAKEN ESPECIALLY IF REACTORS WITH A CAPACITY OF 10,000 MW WERE BUILT ON THE SAME SITE.

C) SAFETY OF REACTORS. THIS SUBJECT IS VERY DIFFICULT TO STUDY BECAUSE MOST TECHNICAL QUESTIONS ARE COVERED BY INDUSTRIAL SECRECY. IT IS THE SAME PROBLEM--THOUGH TO A LESSER DEGREE--FOR MEDICAL DATA ON THE IRRADIATION OF PLANT WORKERS AND PEOPLE LIVING AROUND THE PLANTS. THE REPORT STATES THAT IN MOST CASES CONSIDERABLE SAFETY MARGINS HAVE BEEN TAKEN REGARDING MATERIAL DESIGN. HOWEVER, CERTAIN CRITICAL ELEMENTS SUCH AS THE LIGHT WATER REACTOR VESSEL AND THE COVER PLATE OF THE SUPER-PHENIX BREEDER WERE NOT DESIGNED ON UNCLASSIFIED

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THE BASIS OF STRESS CALCULATION WITH APPROPRIATE SAFETY FACTORS BUT ONLY ON THE BASIS OF TECHNICAL FEASIBILITY. THE REPORT STRESSES THE DIFFICULTY OF PREDICTING THE CONSEQUENCES OF FAILURE OF EVEN ONE ELEMENT OF SUCH A COMPLEX SYSTEM AS A NUCLEAR PLANT AND CRITICIZES RELIANCE ON MATHEMATICAL MODELS ONLY. THERE ARE ALSO SUBSTANTIAL UNCERTAINTIES OVER HUMAN FAILURES IN OPERATING NUCLEAR PLANTS. A MAJOR PROPORTION OF THE

SERIOUS INCIDENTS IN THE U.S. WERE PROVOKED OR CREATED
BY IMPROPER HUMAN MANEUVERS OFTEN CONTRARY TO PROCEDURES.
D. REPROCESSING OF RADIOACTIVE WASTES. THE
CONCENTRATION OF RADIOACTIVE KRYPTON IN THE ATMOSPHERE
AND OF TRITIUM IN THE SEA IS UNDERLINED. MORE STUDIES
ARE NEEDED REGARDING THE STORAGE OF HIGH-LEVEL
RADIOACTIVE WASTES.

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4. THE REPORT CONCLUDES THAT REACTORS ALREADY BUILT
AND OTHERS ON ORDER SHOULD BE CONSIDERED AS
"EXPERIMENTAL" AND THAT IT IS PREMATURE TO LAUNCH A
LARGE INDUSTRIAL PROGRAM BEFORE HAVING LEARNED THE
LESSON FROM TESTS ON THE FIRST MODELS AND HAVING
OBTAINED A SATISFACTORY RESPONSE TO THE PROBLEMS POSED.

QUESTIONS RELATIVE TO THE PROTECTION OF PERSONS AND THE ENVIRONMENT SHOULD NOT BE SIDE ISSUES. THE REPORT RECOMMENDS THAT EFFORTS BE DIVERSIFIED IN ORDER TO ENSURE A BETTER ENERGY SUPPLY. EVEN A SMALL PART OF FUNDS USED IN THE DEVELOPMENT OF NUCLEAR ENERGY PROGRAM COULD BE EFFECTIVE IF DEVOTED TO RESEARCH ON THE DEVELOPMENT OF NEW ENERGIES.

5. THE REPORT WAS PRESENTED BY THE PRESS AS AN ATTACK
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AGAINST THE FRENCH NUCLEAR PROGRAM, WHICH PROMPTED A C.N.R.S. REACTION UNDERLINING THE FACT THAT THE REPORT WAS AN IN-DEPTH STUDY ON THEMES OF FUNDAMENTAL RESEARCH WHICH MAY BE NECESSARY TO DEVELOP TECHNIQUES AND TECHNOLOGIES IN THE FIELD OF ENERGY.

6. THE STATE-UTILITY E.D.F. (ELECTRICITE DE FRANCE) REJECTED THE CONCLUSIONS OF THE C.N.R.S. RESEARCHERS, WHO CONSIDERED IT PREMATURE TO LAUNCH A BROAD NUCLEAR PROGRAM. E.D.F. EXPERTS POINTED OUT THAT UNSOLVED PROBLEMS DO NOT PREVENT THE CARRYING OUT OF THE PLAN, WHICH IS JUSTIFIED BY ACCUMULATED EXPERIENCE IN THE BUILDING OF REACTORS THROUGHOUT THE WORLD. THEY FURTHER DENIED THAT THE CONSTRUCTION OF REACTORS TOTALLING A CAPACITY OF 10,000 MW. ON THE SAME SITE HAD EVER BEEN ENVISAGED OR THAT TECHNICAL FEASIBILITY HAD BEEN THE ONLY CRITERION REGARDING REACTOR SAFETY.

7. THE C.N.R.S. REPORT IS PARTICULARLY TIMELY SINCE THE GOVERNMENT PLANNING COUNCIL ON ENERGY, CHAIRED BY PRESIDENT GISCARD D'ESTAING, WILL MEET IN MID-APRIL TO DECIDE ON THE NEXT STAGE OF THE FRENCH NUCLEAR POWER PROGRAM (1978-1979). FOR THE PERIOD 1976-1977, THE COUNCIL DECIDED TO ORDER 12 NUCLEAR PLANTS OF 1000 MW., BUT THE ACTUAL PRODUCTION MAY BE 8 TO 10 PLANTS.

8. FOR NRC:ANDRE MESSIAH IS POUCHING COPY OF CNRS REPORT TO NRC.
RUSH

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